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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,600	10/14/2003	Thomas Konig	PO-7833/LeA 36,423	4254

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LANXESS CORPORATION  
PATENT DEPARTMENT/ BLDG 14  
100 BAYER ROAD  
PITTSBURGH, PA 15205-9741

EXAMINER

BOYKIN, TERRESSA M

ART UNIT	PAPER NUMBER
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1711

DATE MAILED: 12/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/684,600

Applicant(s)

KÖNIG ET AL.

Examiner

Terressa M. Boykin

Art Unit

1711

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 14 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4/04; 10/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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**Priority**

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

**Claim Rejections - 35 USC § 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-18 are rejected under 35 U.S.C. 102(e) as being anticipated by **US 6545122** see abstract, figure 1, col. 2 line 4 through col. 4 lines 33 and claims 1 and 3.

**US 6545122** discloses a multi-stage, continuous process for evaporating and concentrating feed polymer solutions. In a first stage (a) of the process, the feed polymer solution is concentrated by passing it through one of (i) a combination of a tubular heat exchanger with one of a thin-film evaporator and a coiled tube evaporator, and (ii) a tubular heat exchanger. Each evaporator of (i) having a downstream separator. In a further stage (b), the intermediate polymer solution of the first stage is further concentrated and degassed to form a product polymer in a tubular heat exchanger having a downstream separator. The tubular heat exchanger of the further stage has an inside diameter of from 5 to 30 mm, and a length of from 0.5 to 4

m, and the throughput per heat exchanger tube being from 5 to 30 kg/h, based on the polymer. An entrainer is introduced into a delivery device located downstream from the separator of further stage (b). The product concentrated/degassed polymer of further stage (b) is then isolated and optionally granulated. Also described is an apparatus for evaporating and concentrating feed polymer solutions.

The reference also discloses an apparatus for evaporating polymer solutions, especially of thermoplastic polymers, by indirect heat exchange by passing the polymer solution through heat exchangers, especially tubular heat exchangers, having a downstream separator, characterized in that a) the first stage or stages has or have a tubular heat exchanger and/or coiled tube evaporator (3) each having a downstream separator (4), b) the further stage has a tubular heat exchanger (7) having a downstream separator (8), the tubular heat exchanger (7) having vertical, heated, straight tubes having an inside diameter of from 5 to 30 mm, preferably from 5 to 15 mm, and a length of from 0.5 to 4 m, preferably from 1 to 2 m, and c) there is arranged downstream of each stage a delivery device (6, 9) for transporting the polymer solution, an entrainer, especially carrier gas, being introduced at the intake side of the delivery device of the further stage.

Note figure 1:

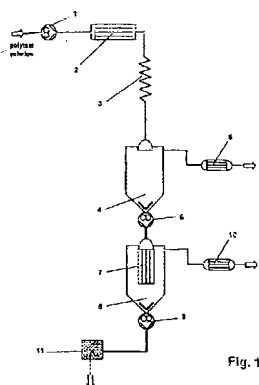


Fig. 1

In Figure 1 above, a pump 1, for example a gear pump, a centrifugal pump or a screw pump, feeds the 5 to 20% polymer solution in a first stage through a first tubular heat exchanger 2 and a coiled tube evaporator 3 to the sump of a separator 4. In the separator 4, the more readily volatile components are separated off and condensed in a condenser 5.

Specifically, with regard to claims 2 through 8, 13 and 17-18, the process discloses:

a) first, in a single stage or in a plurality of individual stages, the polymer solution having a polymer content of from 5 to 20 wt. % is concentrated to from 60 to 75 wt. % in a combination of a tubular heat exchanger and a thin-film evaporator, or a coiled tube evaporator or in a tubular heat exchanger, each having a downstream separator, at a temperature of from 100 to 250 C., the pressure in the separator being approximately from 0.1 to 0.4 MPa,

b) in a further stage, the polymer solution is concentrated from 60 to 75 wt. % to at least 95 wt. %, especially to more than 98 wt. %, in a tubular heat exchanger having a downstream separator, at a temperature of from 130 to 350 C., the tubular heat

exchanger having vertical, heated, straight tubes, with or without built-in static mixers, having an inside diameter of from 5 to 30 mm, preferably from 5 to 15 mm, and a length of from 0.5 to 4 m, preferably from 1 to 2 m, and the throughput per heat exchanger tube through the tubes being from 5 to 30 kg/h, preferably from 15 to 25 kg/h, based on the polymer, the pressure in the separator being from 3 kPa to 0.1 MPa, preferably from 5 kPa to 0.1 MPa, and an entrainer, especially carrier gas, being introduced into the delivery device located downstream of the separator, at the intake side, and c) the degassed polymer is subsequently isolated and, optionally, granulated.

With regard to applicants' claims 9, 10, 11, and 12, note that the reference discloses that the process according to the reference is used for degassing thermoplastic polymers. Those polymers include all plastics that become flowable under the effect of pressure and temperature. There may be mentioned by way of examples polycarbonate, polystyrene, polyphenylene sulfide, polyurethane, polyamide, polyester, polyacrylate, polymethacrylate, SAN resin and their copolymers. The process is very especially suitable for the installation and drying of polycarbonate solutions.

With regard claims 14, 15, and 16 regarding the percentage amounts of the polymers used, note that in the exemplary embodiment shown therein, the reference discloses a gear pump 6 feeds the already concentrated polymer solution (from 25 to 40 wt. % polymer) through a further tubular heat exchanger and a further coiled tube evaporator to a further separator 8, where the more readily volatile components are separated off and condensed in a condenser 10. The solution, which is now concentrated to from 60 to 85 wt. % polymer, is then fed by a gear pump 9 through a

second tubular heat exchanger to the sump of a separator 11.

Thus, the reference discloses a multi-stage continuous process for evaporating and concentrating polymer solutions prepared from the same components and similar apparatus process as claimed by applicants. Thus in view of the above, There appears to be no significant difference between the reference and that which is claimed by applicant(s). Any differences not specifically mentioned appear to be conventional. Consequently, the claimed invention cannot be deemed as novel and accordingly is unpatentable.

#### Correspondence

**Please note that the cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site ([www.uspto.gov](http://www.uspto.gov)), from the Office of Public Records and from commercial sources. Applicants may be referred to the Electronic Business Center (EBC) at <http://www.uspto.gov/ebc/index.html> or 1-866-217-9197.**


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Terressa Boykin whose telephone number is 571 272-1069. The examiner can normally be reached on Monday through Friday from 6:30am to 3:00pm.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. The general information number for listings of personnel is ( 571-272-1700).

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

tmb

A handwritten signature in black ink, reading "Terressa Boykin". The signature is fluid and cursive, with the first name "Terressa" and last name "Boykin" clearly distinguishable.

**Examiner Terressa Boykin**

**Primary Examiner**

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